5123016742 T0: 15123016742

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

99

In re application of: Hamilton, et. al.

Serial No.: 09/826,608

Filed: 4/5/2001

Title: System and Method for Collecting and Restoring User Environment Data Using Removable Storage § Group Art Unit: 2114 § §

Examiner: Bonzo, Bryce P.

Attorney Docket No. AUS920010027US1

International Business Machines Corp. Intellectual Property Law Dept.

§ 11400 Burnet Road § Austin, Texas 78758

DECLARATION UNDER 37 C.F.R. § 1.131

Hon. Commissioner of Patents and Trademarks Washington, D.C. 20231

Sir:

Rick Allen Hamilton II declares as follows:

- I am an Applicant for the patent application entitled 'System and Method for Collecting and Restoring User Environment Data Using Removable Storage," Serial No. 09/826,608, filed 4/5/2001, and an inventor of the subject matter described and claimed therein.
- Prior to March 21, 2001, I completed and reduced to practice, in the United States of America, the invention described and claimed in the subject application, as evidenced by the following:
 - a) I submitted IBM Invention Disclosure Form No. AUS8-2000-1428, attached as Exhibit A hereto, which describes the invention described and claimed in the subject application.

Docket No. AUS9-2001-0027-US1

Page 1 of 2

Atty Ref. No. IBM-1009

TO: 15123016742

P:2/2

APR-12-2004 02:09P FROM:

PATENT

- 3. Each of the dates deleted from Exhibit A is prior to March 21, 2001.
- 4. I further declare that all statements made herein of my own knowledge and all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful and false statements and the like so made are punishable by fine or imprisonment or both under § 1001 of Title 18 of United States Code and that such willful and false statements may jeopardize the validity of the above-referenced application and any patent issuing therefrom.

FURTHER DECLARANT SAYETH NOT.

Rick Allen Hamilton II

Page 2 of 2

Atty Ref. No. IBM-1009

Docket No. AUS9-2001-0027-US1

Exhibit "A"





Disclosure AUS8-2000-1428

Created By: Rick Hamilton Created On: Last Modified By: Rick Hamilton Last Modified On: 10:30:43 AM

*** IBM Confidential ***

Required fields are marked with the asterisk (*) and must be filled in to complete the form

Summarý

| Status | | Under Evaluation |
|--------------------------|--------|---|
| Processing | | |
| Functional | Area | 93 - GS (D. Elix) |
| Attorney/P Profession | atent | David Mims/Austin/IBM |
| IDT Team | | Sue Stewart/Austin/Contr/IBM |
| Submitted | | 11:21:03 AM |
| Owning Div | vision | as . |
| PVT Score C包配配置 | | To calculate a PVT score, use the 'Calculate PVT' button. |
| Incentive P | rogram | |
| Lab | | |
| Technology | Code | |

Inventors with Lotus Notes IDs

Inventors: Rick Hamilton/Charlottesville/IBM, Steve Lipton/Dailas/IBM@IBMUS

| Inventor Name > denotes primary contact | Inventor Serial | Div/Dept | Manager Serial | Manager Name |
|---|--------------------|----------|-------------------|--------------------------|
| Hamilton, Rick A. > Lipton, Steven J. (Steve) | 355403 | 23/V8JM | 941597 | Heath, M. (Mords) |
| | 028867 | 23/V6VD | 857990 | Lopez Jr, Richard (Rick) |

inventors without Lotus Notes IDs

IDT Selection

| IDT Team: | Attorney/Patent Professional: |
|-----------------------|-------------------------------|
| ISUR Stoward Austinus | David Mims/Austin/IBM |
| | |

Response Due to IP&L:

Main Idea

*Title of disclosure (in English)

Customized Computer System Automated Rebuild Tool accomplished via Directly-Attached Devices

*Idea of disclosure

1. Describe your invention, stating the problem solved (if appropriate), and indicating the advantages of using the Invention.

Information Systems' organizations are often faced with heightened challenges in rebuilding computer systems, given the ever-spiraling complexity of systems. In particular, recreating a system environment following a datastrophic failure has become increasingly difficult, due to myriad configuration details that



AUS8-2000-1428 Customized Computer System Automated Rebuild Tool accomplished via unactly-Attached Devices - continued

exist within a user environment. UNIX images, especially, require an awareness of many system parameters, including printer configuration, tty definitions, network interfaces, user id's, and passwords, and a fallure to maintain awareness of these parameters may result in the inability to rebuild a system following a catastrophic problems. Furthermore, even if an awareness is maintained of these parameters, the reconstruction of such system specifics can be both time consuming and prone to administrator error. Therefore, a desirable innovation would not only preserve data about these parameters, but would also provide reconstructive services in the aftermath of such a disaster. Finally, a particularly convenient feature would also permit these rebuild operations to occur via directly-attached devices, such as tapes or disks, so that network connectivity is not required for what may be a partially-functional box.

The innovation outlined here solves the problem of post-failure rebuild for many system parameters. without having to take the drastic step of mksysb restoration, using a directly-attached device, e.g., tape or disk, in the manner described above. Specifically, a methodology and a corresponding set of comprehensive scripts have been developed to record many facets of a system's configuration, including printer definitions, tty definitions, network interfaces, user id's, and passwords. Furthermore, the outputs of these scripts can be fed into their reconstructive counterparts, another series of scripts which have the ability to automatically reconstruct lost or destroyed system parameters back onto the "damaged" computer. Thus, if any of the aforementioned parameters are lost via hardware, software, or administrator error, they can be easily reconstructed using the mechanisms laid out here. Note that although this script was written for UNIX-based systems, such as AIX, HP-UP, Solaris, and Linux, the principles here can be extended to other architectures as mentioned above.

The sequence of operation is such that relevant data is captured by the scripts, as outlined below. By definition, the data containing the unique parameters of the computer system, e.g., the users and passwords, the tty definitions, etc, is stored off-board on disparate media, physically separated from the target computer. In the event of a catastrophic error, where elements of the target computer's configuration may be lost via software, hardware, or operator error, the lost parameters can then be rebuilt with minor human intervention. The scripts and their respective roles are as follow:

1. checklist_rb.scr

purpose: builds a checklist which is used during the building of the new system

get_personality_rb.scr

purpose: this is the main program which gathers parameter information and stores it on disparate media such as tape or disk. In the process, it creates a variety of files which are used during the build of the new system.

restore_personality_rb.scr

purpose: this is the main program which restores the parameters to the workstation/server which is retrieved from the media.

4. X11_restore_rb.scr

purpose: used for special customizing of X11mwmrc file for X-Windows

perms_reference_rb.txt

purpose: used to re-set permissions of key files whose permissions might have been "modified" during the capture or restore process.



AUS8-2000-1428 Customized Computer System Automated Rebuild Tool accomplished via ___ectly-Attached Devices - continued

6. get_filesystem_info_rb.scr purpose: gathers information about critical filesystems to be used by scripts

The flow, in rough terms, for the capture / preservation process is as follows:

Capture Preparation

- 1) Insert program floppy into floppy drive.
- 2) Make a directory /ibm2.
- Change directory to /ibm2.
- 4) Download the contents of the program floppy to /ibm2 with tar.
- 5) Insert blank tape into the tape drive.

Capture Execution

- 6) Run the data capture program: get_personality_rb.scr with the name of the tape drive, /dev/rmt0 Follow the on-screen instructions.
- 7) If there are errors, the program will display error messages. All errors messages are written to an errorlog.txt file.
- 8) If the error message "Unsuccessful connection to " is displayed, the user can either cancel the entire capture session for all workstations named in wsname. list with a control-break or the user can let the process continue on its own.
- 9) Successful steps also display messages on the screen. For example, this message is critical to the success of the process: "Successful connection to ".
- 10) When the data capture program is complete, then a checklist is printed. This checklist is used whenever the workstation parameters have to be restored.
- 11) Verify the success of the process by viewing the errorlog.txt and the logfile.txt files. In addition, view the contents of each directory created when the program was executed.

Upon system failure, when a restoration of parameters is needed, the process flow corresponds to the following:

Restoration

- 1) Make sure that a replacement workstation, or the repaired workstation, is available with the operating system installed.
- 2) Go to a root user session on the replacement workstation





- 3) Insert program floppy into floppy drive
- 4) Make a directory /ibm2
- 5) Change directory to /ibm2
- 6) Download the contents of the program floppy to /ibm2 with tar
- 7) Insert the tape created by the data capture program,get_personality_rb.scr, into the tape drive
- 8) run the restore program: restore_personality_rb.scr
- 9) Status messages will be displayed as each parameter is restored to the replacement workstation. For example: " restoring /etc/security/group"
- 10) the user will be prompted to continue at each step and has the option to discontinue the process with a

For example: "press enter to continue"

11) When finished, the program deletes the temporary files

By providing the means to both capture data about production systems, and to preserve it on physically separated media, IBM is ensuring a heightened readiness of client operations. By providing the means to easily restore such data, thereby recreating the unique system parameters onto each computer following a failure incident, IBM is providing a mechanism to minimize recovery time while mitigating the chance of operator-induced errors. Accordingly, the result is increased customer satisfaction through reduced cost-of-ownership for IBM Global Services clients.

2. How does the invention solve the problem or achieve an advantage, (a description of "the invention", including figures inline as appropriate)?

Use of this innovation permits a reduced number of full system backups, or "mksysb's" in UNIX parlance. saving storage media, time, and effort. Furthermore, this permits creation and maintenance of one backup to be kept for a family of machines, which can be used for restoration upon any members of that family. After restoration of that common backup, unique parameters can be restored using the process described

- 3. If the same advantage or problem has been identified by others (inside/outside IBM), how have those others solved it and does your solution differ and why is it better?
- 4, if the invention is implemented in a product or prototype, include technical details, purpose, disclosure details to others and the date of that implementation.
- *Critical Questions (Questions 1 7 must be answered)

| Question 1 On what date was the invention workable? Please format the date as MM/DD/YY (Workable means i.e. when you know that your design will solve the problem) | YY | _ |
|--|---------------|---|
| Question 2 Is there any planned or actual publication or disclosure of your invention to anyone outside BM? | ○ Yes ● No | |

Page 4

at 10:36:25 AM



| AUS8-2000-1428 Customized Comp. System Automated Rebuild Tool accomplished via sctly-Attached D | evices - continu |
|---|-----------------------------|
| If yes, Enter the name of each publication or patent and the date published below. Publication/Patent: Date Published or Issued: | |
| Date Published or Issued: | |
| Are you aware of any publications, products or patents that relate to this invention? | ○ Yes ● No |
| f yes, Enter the name of each publication or patent and the date published below. Publication/Patent: Date Published or Issued: | 10 140 |
| | |
| Guestion 3 Has the subject matter of the invention or a product incorporating the invention been sold, used internally in manufacturing, announced for sale, or included in a proposal? | ○ Yes ● No |
| s a sale, use in manufacturing, product announcement, or proposal planned? | O Yes |
| If Yes, identify the product if known and indicate the date or planned date of sale, announced proposal and to whom the sale, announcement or proposal has been or will be made. Product: Version/Release: Code Name: Date: To Whom: | ments, or |
| f more than one, use cut and paste and append as necessary in the field provided. | <u> </u> |
| *Question 4 Was the subject matter of your invention or a product incorporating your invention used in cublic, e.g., outside IBM or in the presence of non-IBMers? If yes, give a date. **Please format the date as MM/DD/YYYY | Yes O No |
| Question 5 lave you ever discussed your invention with others not employed at IBM? | O Yes |
| yes, identify individuals and date discussed. Fill in the text area with the following information of the individuals, the employer, date discussed, under CDA, and CDA #. | n, the name |
| | |
| Question 6 Vas the invention, in any way, started or developed under a government contract or project? | ○ Yes ● No ○ Not sure |
| Yes, enter the contract number | 103 1101 3014 |
| | |
| Question 7 /as the invention made in the course of any alliance, joint development or other contract ctivities? | ○ Yes ● No ○ Not Sure |
| Yes, enter the following :Name of Alliance, Contractor or Joint Developer | 1 |
| Contract ID number | |
| Relationship contact name | |
| Relationship contact E-mail | |
| Relationship contact phone | |
| | |
| uestlon 8 ave you submitted, or are you aware of, any related disclosure submission? | O Yes No |
| | |



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| Patent Value Tool has not yet been used to calculate a score. | |
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| tent Value Tool (Optional - this may be used by the inventor and attorne) te Patent Value tool can be used by you or the evaluation team to determine to the of your invention.) | |
| Other (Please specify below) | |
| Service providers | |
| Integrated solution providers | |
| Developers of networking software Developers of application software | |
| Developers of operating systems | |
| Non-computer manufacturers | |
| Manufacturers of PC's | |
| Manufacturers of workstations | |
| Manufacturers of entry servers | |
| uestion 9 That type of companies do you expect to compete with inventions of this type? Manufacturers of enterprise servers. | Check all that apply |

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TO: 15123016742

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APR 1 2 2004

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In reapplication of: Hamilton, et. al.

Serial No.: 09/826,609

Filed: 4/5/2001

Title: System and Method for Collecting and Restoring User Environment Data Using Removable Storage

Group Art Unit: 2114

Examiner: Honzo, Bryce P.

Attorney Docket No. AUS920010027US1

International Business Machines Corp. Intellectual Property Law Dept.

11400 Burnet Road § Austin, Texas 78758

DECLARATION UNDER 37 C.F.R. § 1.131

Hon, Commissioner of Patents and Trademarks Washington, D.C. 20231

Sir:

Steven Jay Lipton declares as follows:

- 1. I am an Applicant for the patent application entitled 'System and Method for Collecting and Restoring User Environment Data Using Removable Storage," Serial No. 09/826,608, filed 4/5/2001, and an inventor of the subject matter described and claimed therein.
- 2. Prior to March 21, 2001, 1 completed and reduced to practice, in the United States of America, the invention described and claimed in the subject application, as evidenced by the following:
 - a) I submitted IBM Invention Disclosure Form No. AUS8-2000-1428, attached as Exhibit A hereto, which describes the invention described and claimed in the subject application.

Docket No. A.U59-2001-

Page 1 of 2

Atty Ref. No. IBM-1009

0027-US1

APR-12-2004 12:34P FROM:

p.21

TD: 15123016742

P:2/2

PATENT

- 3. Each of the dates deleted from Exhibit A is prior to March 21, 2001.
- 4. I further declare that all statements made herein of my own knowledge and all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful and false statements and the like so made are punishable by fine or imprisunment or both under § 1001 of Title 18 of United States Code and that such willful and false statements may jeopardize the validity of the above-referenced application and any patent issuing therefrom.

FURTHER DECLARANT SAYETH NOT.

41. () (- J. 1. E

Steven Jay Lipten

Date: 4/1/2024

Docket No. AUS9-2001-0027-US1 Page 2 of 2

Atty Reil, No. IBM-1009

p.22



Exhibit "A"

p.23





Disclosure AUS8-2000-1428

Created By: Rick Hamilton Created On: 08:31:32 AM

Last Modified By: Rick Hamilton Last Modified On: 10:30:43

** IBM Confidential ***

Required fields are marked with the asterisk (*) and must be filled in to complete the form .

Summary

| Status | Under Evaluation | |
|---------------------------------|---|-------|
| Processing Location | n AUS | |
| Functional Area | 93 - GS (D. Elix) | |
| Attorney/Patent Professional | David Mims/Austin/IBM | : |
| IDT Team | Sue Stewart/Austin/Contr/IBM | |
| Submitted Date | 11:21:03 AM | |
| Owning Division | 38 | |
| PVT Score | To calculate a PVT score, use the 'Calculate PVT' button. | |
| Incentive Program | | ÷ • • |
| Lab | | - |
| Technology Code | | |

Inventors with Lotus Notes IDs

Inventors: Rick Hamilton/Charlottesville/IBM, Steve Lipton/Dallas/IBM@IBMUS

| Inventor Name > denotes primary contact | inventor Serial | Div/Dept | Manager Serial | Manager Name |
|---|--------------------|----------|-------------------|--------------------------|
| Hamilton, Rick A. | 355403 | 23/V8JM | 941597 | Heath, M. (Morris) |
| > Lipton, Steven J. (Steve) | 028867 | 23/V6VD | 857990 | Lopez Jr. Richard (Rick) |

Inventors without Lotus Notes IDs

IDT Selection

| ID7 Team: | Attorney/Patent Professional: |
|--|-------------------------------|
| [| David Mims/Austin/IBM |
| COS CIEWARY ACSON OF CONTROL OF C | David Millia Adsulvicia |

Response Due to IP&L:

Main Idea

*Title of disclosure (in English)

Customized Computer System Automated Rebuild Tool accomplished via Directly-Attached Devices

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1. Describe your invention, stating the problem solved (if appropriate), and indicating the advantages of using the invention.

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AUS8-2000-1428 Customized Composar System Automated Rebuild Tool accomplished via superfly-Attached Devices - continued

exist within a user environment. UNIX images, especially, require an awareness of many system parameters, including printer configuration, tty definitions, network interfaces, user id's, and passwords, and a fallure to maintain awareness of these parameters may result in the inability to rebuild a system following a catastrophic problems. Furthermore, even if an awareness is maintained of these parameters, the reconstruction of such system specifics can be both time consuming and prone to administrator error. Therefore, a desirable innovation would not only preserve data about these parameters, but would also provide reconstructive services in the aftermath of such a disaster. Finally, a particularly convenient feature would also permit these rebuild operations to occur via directly-attached devices, such as tapes or disks, so that network connectivity is not required for what may be a partially-functional box.

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purpose: builds a checklist which is used during the building of the new system

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purpose: this is the main program which gathers parameter information and stores it on disparate media such as tape or disk. In the process, it creates a variety of files which are used during the build of the new system.

3. restore_personality_rb.scr

purpose: this is the main program which restores the parameters to the workstation/server which is retrieved from the media.

4. X11_restore_rb.scr

purpose: used for special customizing of X11mwmrc file for X-Windows

5. perms_reference_rb.txt

purpose: used to re-set permissions of key files whose permissions might have been "modified" during the capture or restore process.



AUS8-2000-1428 Customized Compars System Automated Rebuild Tool accomplished via __ectly-Attached Devices - continued

6. get_filesystem_info_rb.scr purpose: gathers information about critical filesystems to be used by scripts

The flow, in rough terms, for the capture / preservation process is as follows:

Capture Preparation

- 1) Insert program floppy into floppy drive.
- 2) Make a directory /ibrn2.
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- 5) Insert blank tape into the tape drive.

Capture Execution

- 6) Run the data capture program: get_personality_rb.scr with the name of the tape drive, /dev/rmt0 Follow the on-screen instructions.
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- 9) Successful steps also display messages on the screen. For example, this message is critical to the success of the process: "Successful connection to ".
- 10) When the data capture program is complete, then a checklist is printed. This checklist is used whenever the workstation parameters have to be restored.
- 11) Verify the success of the process by viewing the errorlog.txt and the logfile.txt files. In addition, view the contents of each directory created when the program was executed.

Upon system failure, when a restoration of parameters is needed, the process flow corresponds to the following:

Restoration

- 1) Make sure that a replacement workstation, or the repaired workstation, is available with the operating system installed.
- 2) Go to a root user session on the replacement workstation

Page 3

p.26

AUS8-2000-1428 Customized Comp. System Automated Rebuild Tool accomplished via __actly-Attached Devices - continued

- 3) Insert program floppy into floppy drive
- 4) Make a directory /ibm2
- 5) Change directory to /ibm2
- 6) Download the contents of the program floppy to /lbm2 with tar
- 7) Insert the tape created by the data capture program,get_personality_rb.scr, into the tape drive
- 8) run the restore program: restore_personality_rb.scr
- 9) Status messages will be displayed as each parameter is restored to the replacement workstation. For example: " restoring /etc/security/group"
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For example: "press enter to continue"

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By providing the means to both capture data about production systems, and to preserve it on physically separated media, IBM is ensuring a heightened readiness of client operations. By providing the means to easily restore such data, thereby recreating the unique system parameters onto each computer following a failure incident, IBM is providing a mechanism to minimize recovery time while mitigating the chance of operator-induced errors. Accordingly, the result is increased customer satisfaction through reduced cost-of-ownership for IBM Global Services clients.

2. How does the invention solve the problem or achieve an advantage, (a description of "the invention", including figures inline as appropriate)?

Use of this innovation permits a reduced number of full system backups, or "mksysb's" in UNIX parlance, saving storage media, time, and effort. Furthermore, this permits creation and maintenance of one backup to be kept for a family of machines, which can be used for restoration upon any members of that family. After restoration of that common backup, unique parameters can be restored using the process described here!

- 3. If the same advantage or problem has been identified by others (inside/outside IBM), how have those others solved it and does your solution differ and why is it better?
- 4. If the invention is implemented in a product or prototype, include technical details, purpose, disclosure details to others and the date of that implementation.

*Critical Questions (Questions 1 - 7 must be answered)

| Question 1 On what date was the invention workable? Please format the date as MM/DD/YY (Workable means i.e. when you know that your design will solve the problem) | ΥY |
|--|---------------|
| Question 2 s there any planned or actual publication or disclosure of your invention to anyone outside BM? | ○ Yes ● No |

Page 4



AUS8-2000-1428 Customized Comp. System Automated Rebuild Tool accomplished via ___ectly-Attached Devices - continued If yes, Enter the name of each publication or patent and the date published below. Publication/Patent: Date Published or Issued: Are you aware of any publications, products or patents that relate to this invention? O Yes ₩. No f yes, Enter the name of each publication or patent and the date published below. Date Published or Issued: Question 3 O Yes Has the subject matter of the Invention or a product incorporating the invention been sold, ● No used internally in manufacturing, announced for sale, or included in a proposal? s a sale, use in manufacturing, product announcement, or proposal planned? Yes No No If Yes, identify the product if known and indicate the date or planned date of sale, announcements, or proposal and to whom the sale, announcement or proposal has been or will be made. Product: ersion/Release: Code Name: Date: To Whom: f more than one, use cut and paste and append as necessary in the field provided. Question 4 Yes Was the subject matter of your invention or a product incorporating your invention used in O No bublic, e.g., outside IBM or in the presence of non-IBMers? If yes, give a date. Please format the date as MM/DD/YYYY Question 5 O Yes Have you ever discussed your invention with others not employed at IBM? ● No If yes, identify individuals and date discussed. Fill in the text area with the following information, the names of the individuals, the employer, date discussed, under CDA, and CDA #. Question 6 O Yes Was the invention, in any way, started or developed under a government contract or project? No. O Not sure f Yes, enter the contract number Question 7 O Yes Was the invention made in the course of any alliance, joint development or other contract ● No activities? O Not Sure f Yes, enter the following :Name of Alliance, Contractor or Joint Developer Contract ID number Relationship contact name Relationship contact E-mail Relationship contact phone Question B O Yes Have you submitted, or are you aware of, any related disclosure submission? No

AUS8-2000-1428 Customized Comp. System Automated Rebuild Tool accomplished via. Judiy-Attached Devices - continued If Yes, please provide the title and docket or disclosure number below: Question 9 What type of companies do you expect to compete with inventions of this type? Check all that apply. ☐ Manufacturers;of enterprise servers Manufacturers of entry servers Manufacturers of workstations Manufacturers of PC's Non-computer manufacturers Developers of operating systems Developers of networking software Developers of application software Integrated solution providers Service providers Other (Please specify below) Patent Value Tool (Optional - this may be used by the inventor and attorney to assist with the evalua (The Patent Value tool can be used by you or the evaluation team to determine the potential licensing value of your invention.) The Patent Value Tool has not yet been used to calculate a score. Post Disclosure Text & Drawings Enter any additional information relating to this disclosure below:

Page 6

(Form Revised)